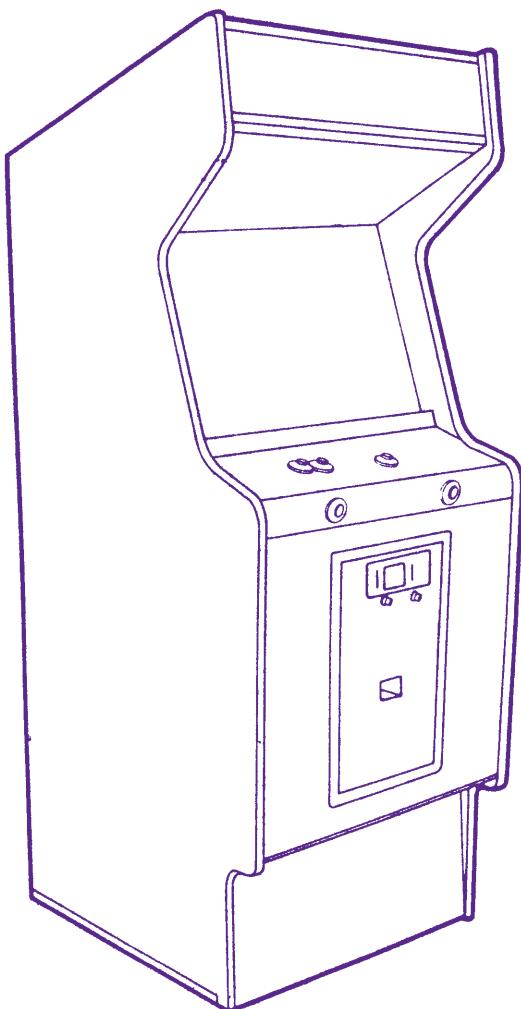


**Gremlin®/SEGA®**

# MOON CRESTA

**Service Manual & Parts Catalog**



**GREMLIN INDUSTRIES, INC.**

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## SPECIFICATIONS

* Space Requirer -----	638 mm x 703 mm
* Game Height -----	1722 mm
* Power Source -----	AC 100V ~ 240V
* CRT -----	20 Color TV
* Power Consumption -----	120 W

Note : These instructions and specifications may be changed without prior notification. If this machine is reconstructed without our permission, we can not take responsibility for the machine.

# 1 INSTALLATION

1. As the SEGA Monaco GP is for "indoor use", do not install outdoors.
2. When installing, avoid the following places.
  - Near indoor pools or showers
  - Where leaks exist
  - Under direct sunlight
  - Near heaters or other heat emitting devices
  - Where hazardous items (volatile fluids, gas cylinders etc.)
  - Where vibrations are severe (near construction sites where jack hammers etc. are used)
  - Inclined places
  - Near fire extinguishing equipment
  - Near emergency exits
  - Set power transformer changeover switch to 110V in locations where the power is normally below 90V.

# 2 CARE IN OPERATION

1. Inspection
  - Are the IC boards and other connectors firmly connected.
  - Connect ground wire as prescribed. (Never connect to gas pipes, water pipes or electrical conduits)
  - Arrange line cords and ground wires in the aisle so they will not be tripped over.
2. Care in Handling
  - Always turn off the power supply switch before handling.
  - Avoid inserting and pulling the plug in rapid succession.
  - Do not check the IC board circuit with a tester.
3. Care in Usage
  - Care should be taken to avoid dragging or dropping the machine when transporting to prevent damage to the CRT.
  - Use fuse of stipulated rating.
  - As high voltage is present in the monitor and TV PCB, adjustments or repairs should be left up to a serviceman and should never be touched by the layman.
  - As color alignment may become disturbed due to terrestrial magnetism when the machine is moved or its direction changed, demagnetize the unit by pushing the demagnetizing switch.
  - Refrain from holding the steering wheel or shift lever when transporting the machine.

### 3 Game Play

Gremlin/Sega "MOON CRESTA" is a one or two player game in which players may compete for highest score against the game computer. Each time a player is hit by an alien, the game switches to his opponent's sequence.

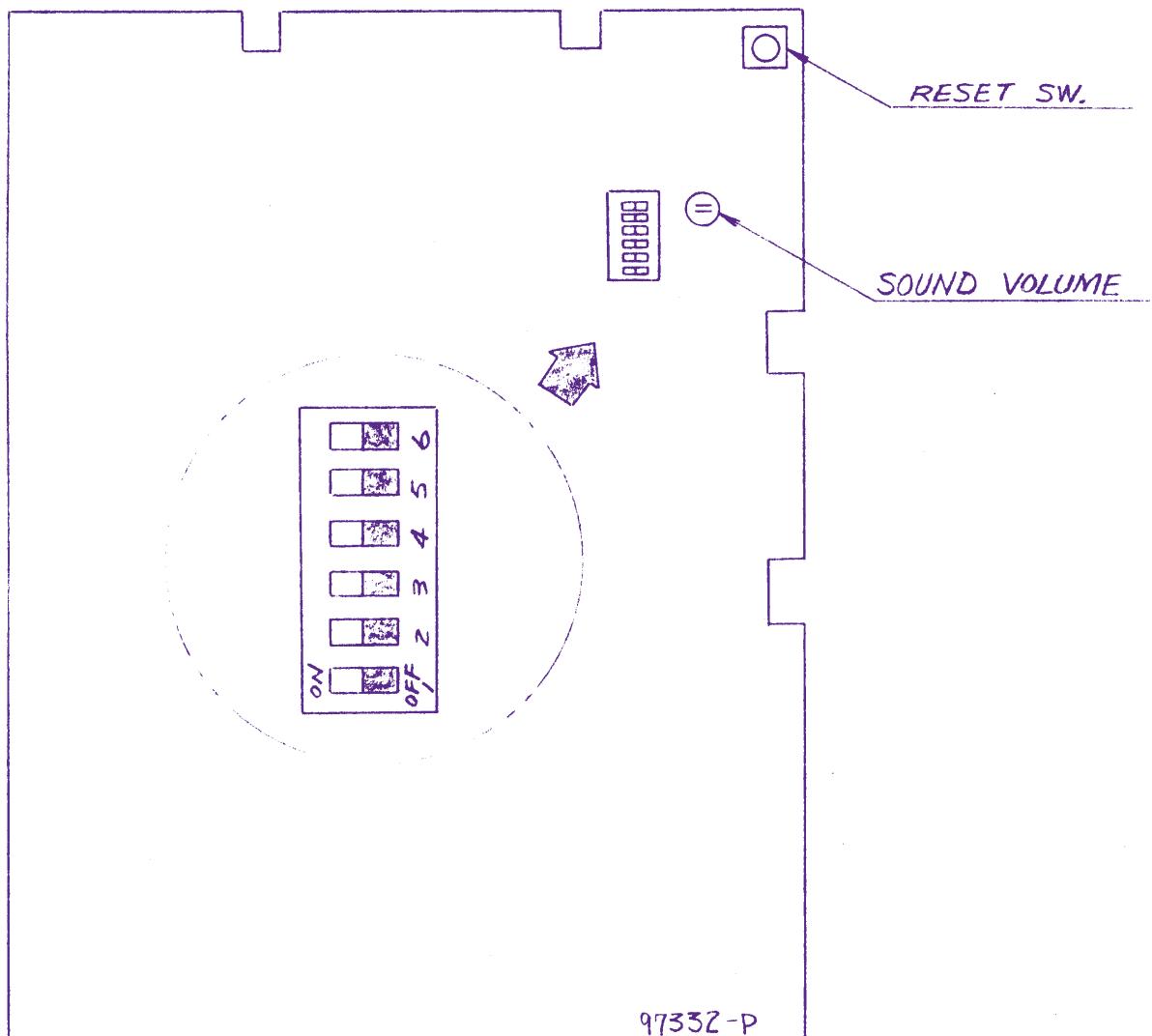
The object is to destroy as many of the descending aliens as possible. To accomplish this the player is given a three stage multi-fire Warship. He begins with the first stage, firing a single laser at the enemy. If he is successful in eliminating the first four sets of aliens, he is given an opportunity to dock his first stage onto the second within a specific time limit (the sooner he unites the stages, the higher is his awarded score).

Once docked, the stages combine their firing power, so the first (one laser) adds to the second (two lasers) giving the player a total of three usable lasers as the game continues.

The player then must face two more sets of aliens and a shower of meteors, after which he has a chance to dock again, this time uniting with the third stage for a combined fire power of five lasers. If he is able to defeat the last two sets of aliens intact, the entire sequence begins again. The game continues with increasing difficulty until the entire warship is destroyed. When the warship is hit the player continues with whatever stages remain. If his score reaches 30,000 he is awarded a free game and his score continues to accumulate.

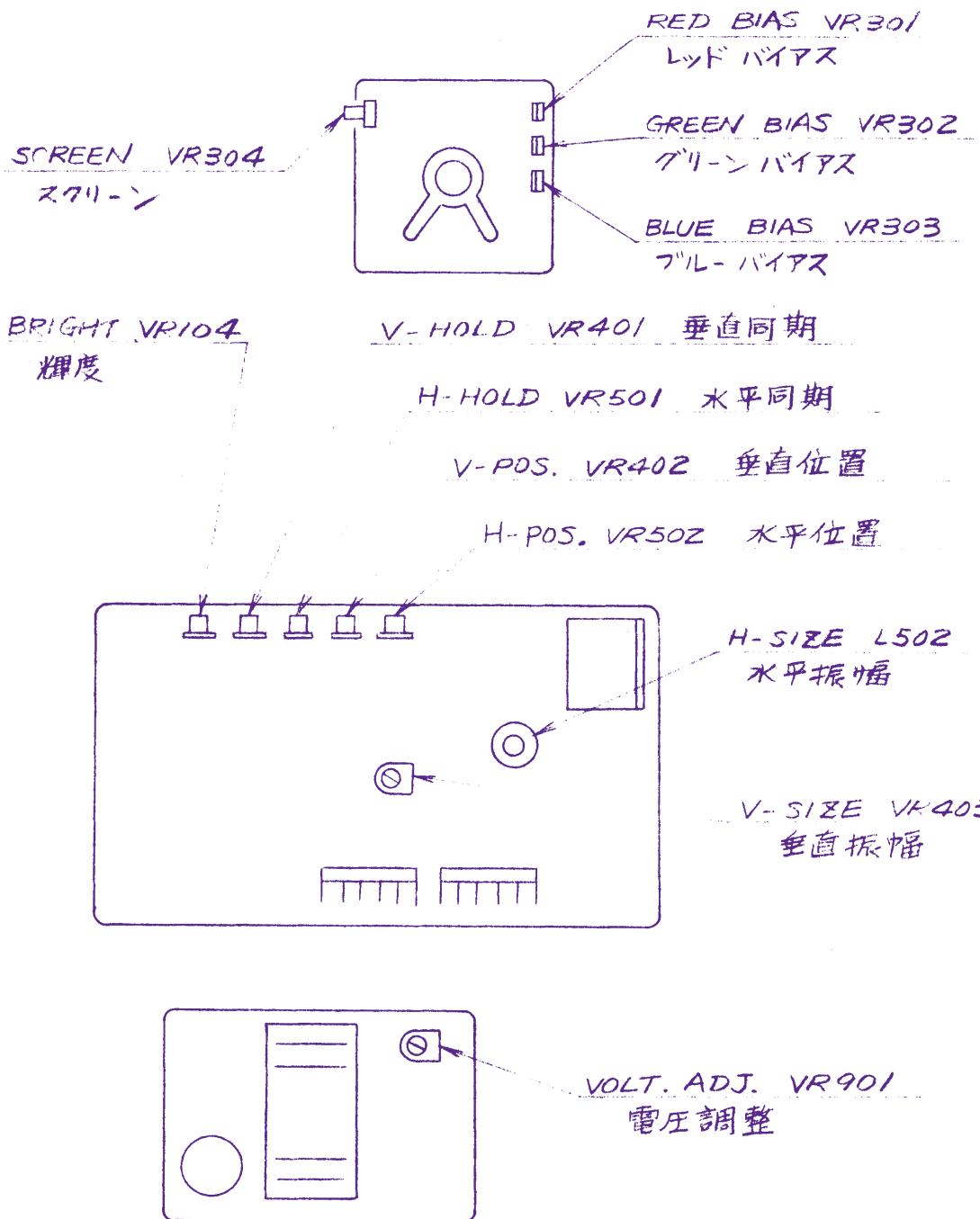
## 4 IC Board Adjustments

Note : • Switch adjustment have to be done after disconnect the power supply.  
 • Switches are set as under-lined position when the machine is shipped.



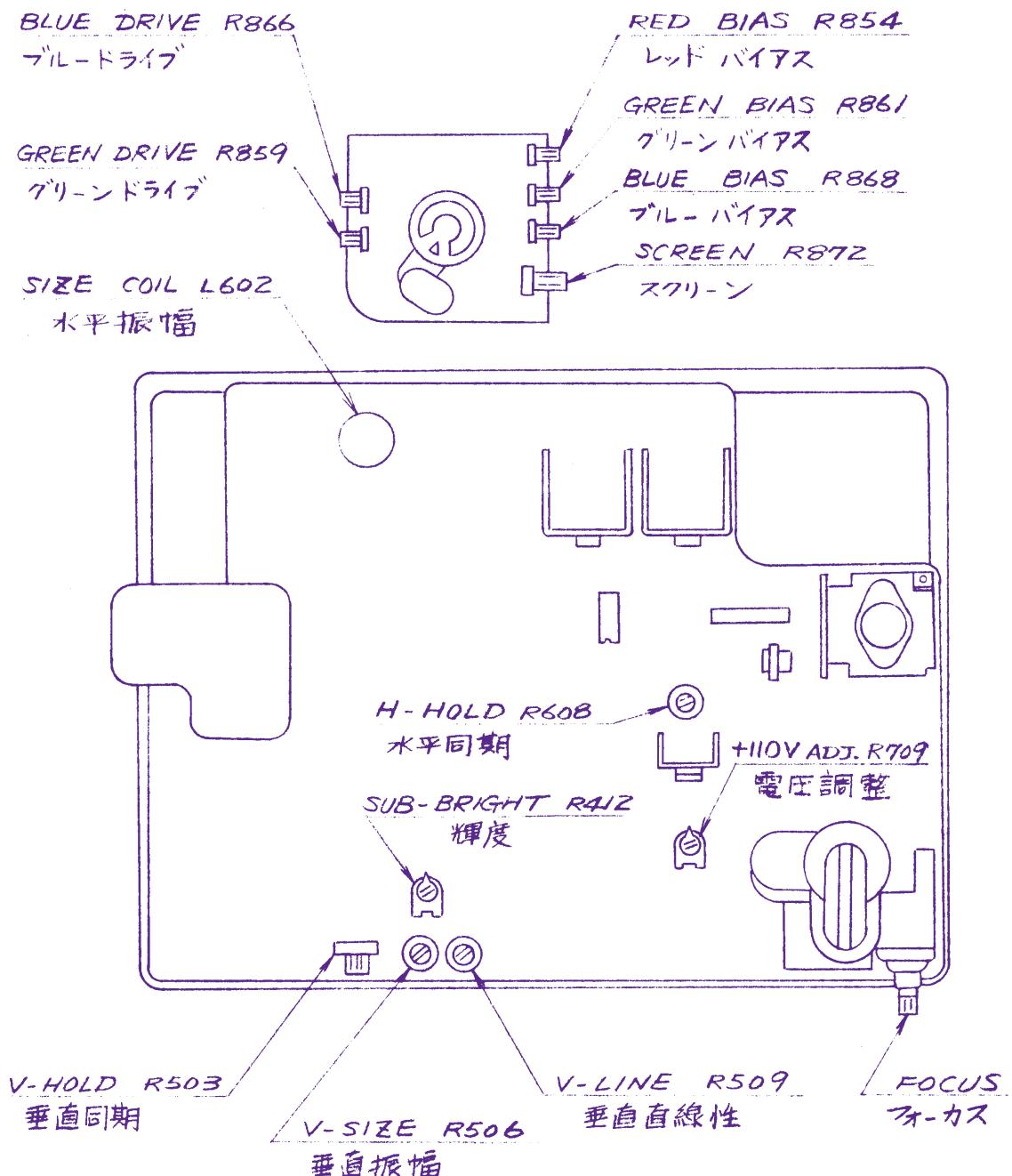
	SW. NO.	1	2	3	4	5	6
EXTENDED PLAY							
30000 PT.	OFF						
50000 PT	ON						
	NOT USE						
COIN CHUTE 1							
1 COIN - 1 PLAY				OFF	OFF		
2 COIN - 1 PLAY				ON	OFF		
3 COIN - 1 PLAY				OFF	ON		
4 COIN - 1 PLAY				ON	ON		
COIN CHUTE 2							
1 COIN - 1 PLAY						OFF	OFF
1 COIN - 2 PLAY						ON	OFF
1 COIN - 3 PLAY						OFF	ON
FREE PLAY					ON	ON	

5. TV VOLUME ADJUSTMENTS (1)  
(NANAO TYPE)



## 5 TV VOLUME ADJUSTMENTS (2)

(SHARP TYPE)



# 5 Adjustable Controls

## A. Brightness

Remember to observe the precautions regarding high voltages when you make any adjustments on this monitor!

Note that before you adjust the brightness, the monitor should have been turned on for at least 5 minutes. Keep the game in the attract or play mode.

Find the black plastic knob near the top center of the Neck Printed-Circuit Board or PCB, sometimes called the picture-tube socket board (see Figure 2). Turn this brightness (or screen voltage) control until you achieve a pleasing level of brightness.

Too high a brightness causes the retrace lines to show. Too low a brightness causes the entire screen to become dark and obscured.

## B. Horizontal Hold

Use this adjustment if the picture drifts sideways across the screen. Find the two potentiometers on the right end of the Main PCB (as you face the monitor's screen)—see Figure 3. Turn the coarse or fine pot until the black lines no longer slant downwards or upwards, and you obtain a normal screen image.

## C. Vertical Hold

Use this adjustment if the picture drifts straight up or down on the screen. The vertical hold control is the large black knob, third from the left on the Main PCB (as you face the monitor's screen)—see Figure 3.

Turn this control in either direction until the picture no longer drifts straight up or down on screen.

## D. Vertical Linearity

Badly adjusted vertical linearity looks like the horizontal raster lines are "squashed" together in certain areas on the screen—usually at the top or bottom. Linearity tends to drift out of adjustment in high-temperature areas after the monitor has been used a long time, or if you replace the picture tube.

not disappear off the edges, which would indicate overscanning.

## F. Horizontal Width

Before using this control, be sure the monitor has been turned on for 5 minutes or more. If the screen image is too wide or narrow, you should use this control to adjust it for proper width.

Set the game for the diagnostic that displays the convergence grid and dots. Locate the horizontal width control on the monitor's Main PCB: it is the small coil at the center rear of this board. Be sure to use only a non-metal Allen wrench (commonly called a "tweaking" tool) for this adjustment! Turn this control until the right and left grid lines run along the edges of the screen. The lines should not disappear off the edges, which would indicate overscanning.

## G. Focus

This control simply changes the sharpness of the screen image. The focus adjustment is above the right rear of the monitor's Main PCB; the black adjustment knob protrudes from the high-voltage housing/heat sink. Turn this control until you get the optimum screen sharpness possible.

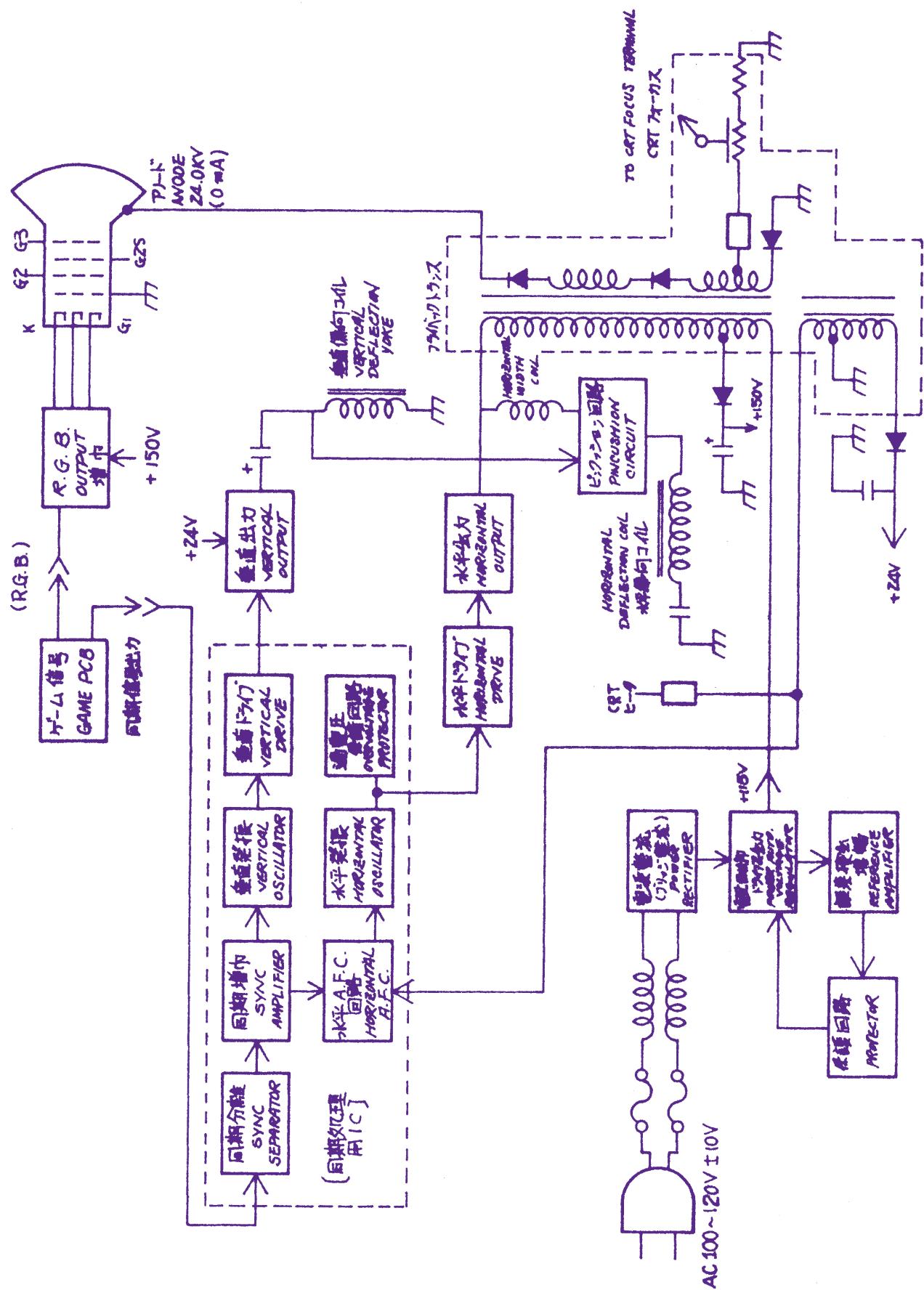
The vertical linearity control is located on the Main PCB, fourth from the left as you face the monitor screen. Turn it slowly until all the raster lines are about equally spaced vertically.

## E. Vertical Height

If the screen image is not large enough or too large vertically, then you can adjust it very easily with this control. Using this control will stretch or compress the image vertically. The vertical height control affects the spacing between the raster lines equally.

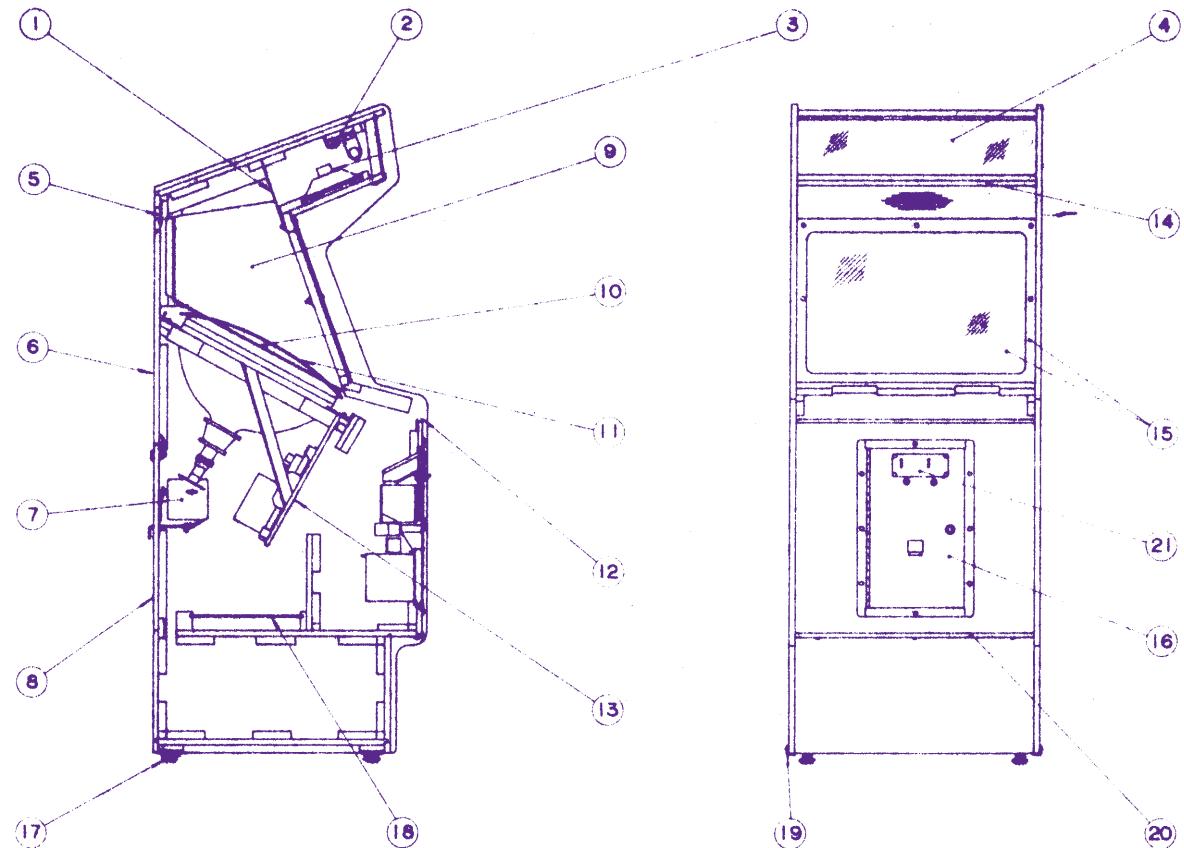
Set the game for the diagnostic that displays the convergence grid and dots. Locate the vertical height control on the monitor's Main PCB: it is the second knob from the left underneath the screen. Turn this control until the top and bottom grid lines run along the edges of the screen. The lines should

# Color Monitor Troubleshooting



# 7 Parts Catalog

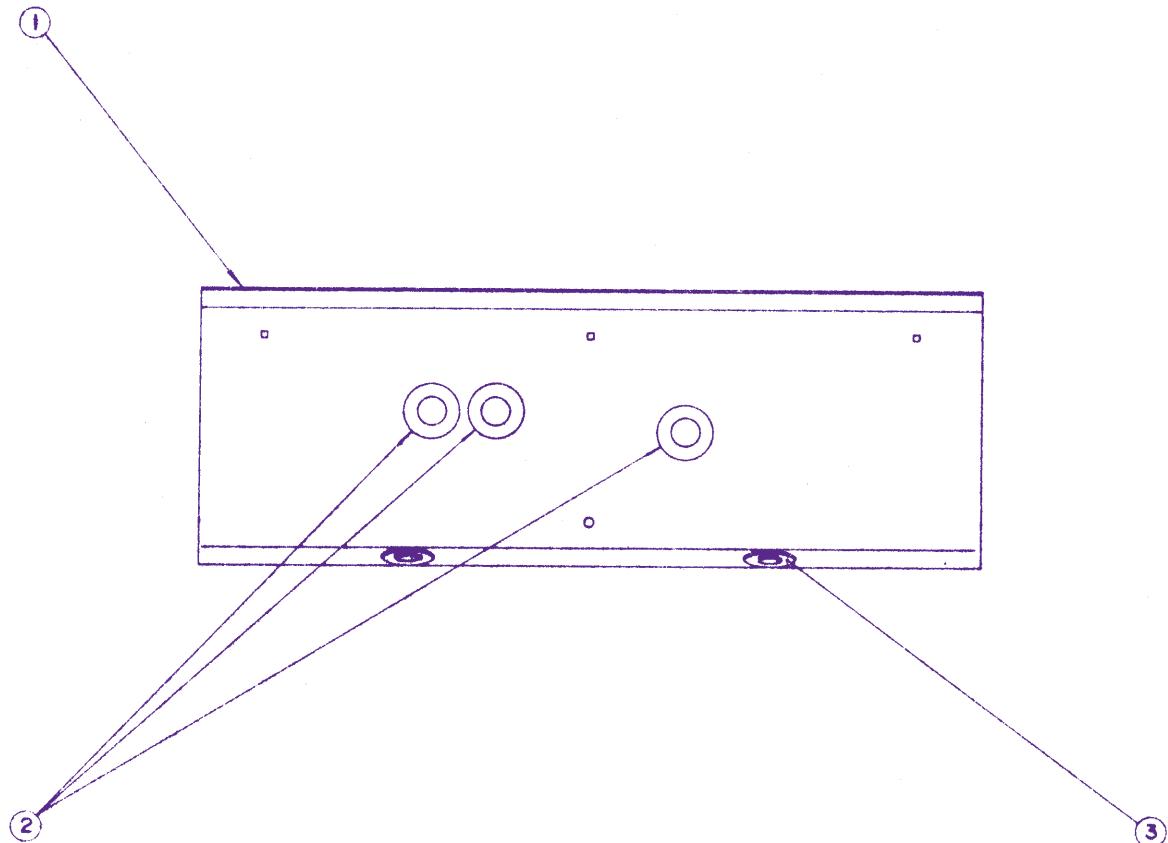
## Cabinet Accessory Assy



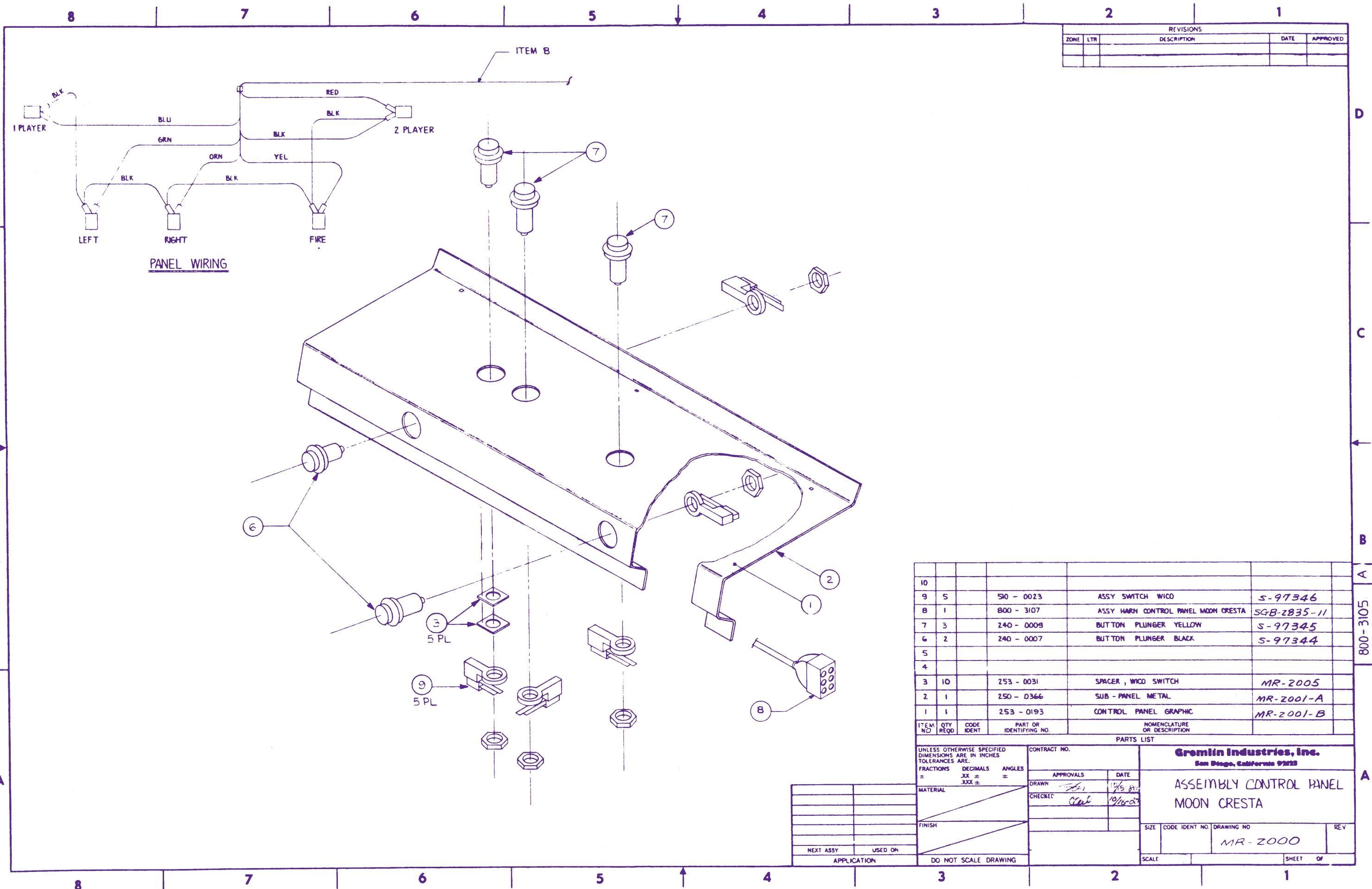
1	MR-1015	Light Baffle
2	MR-1004	FLUORESCENT LIGHT ASSY,15W
	S-91058	Fluorescent Light,Black Light,15W
3	MR-1009	Speaker Guard Plate
	S-97336	Speaker,230 x 150mm,8Ω,6W
4	MR-1012	Top Panel
5	MO-1071	Net Plate
6	MR-1002	Back Door,Upper
7	MR-1019	JUNCTION BOX ASSY
	97339	Choke,1/4H
	S-94972	Noise Filter,AC250V,2A
	S-94339	Switch,Micro Type
	S-95835	Cable & Plug Assy
	S-96774	Fuse,5A,Time-Lag Type
8	MR-1003	Back Door,Lower
9	MR-1017	Scenery,Right
	MR-1018	Scenery,Left
10	MR-1016	Scenery,Rear
11	MR-1024	TV Mask
12	MR-1005	Trim,Upper
13	97232-P	COLOR DISPLAY ASSY,20TYPE,120V
	97334-P	COLOR DISPLAY ASSY,20TYPE,100V
14	MR-1007	Ornament Frame
15	MR-1013	Window Panel
16	MR-1014	Bezel Frame
16	MR-1200	COIN CHUTE DOCR & CASH BOX ASSY
	CC-2006	Coin Chute,Rejector Type,25¢ x 1
17	M-163-4(L)	Leg Adjuster
18	97332-P	IC BOARD ASSY,MONO CRESTA
19	MR-1008	Corner Protector
20	MR-1006	Trim,Lower
21	80824	Denomination Plate,25¢
	MO-1245	Coin Entry Plate,USA 25¢ x 2

# 7 Parts Catalog

## Control Panel Assy

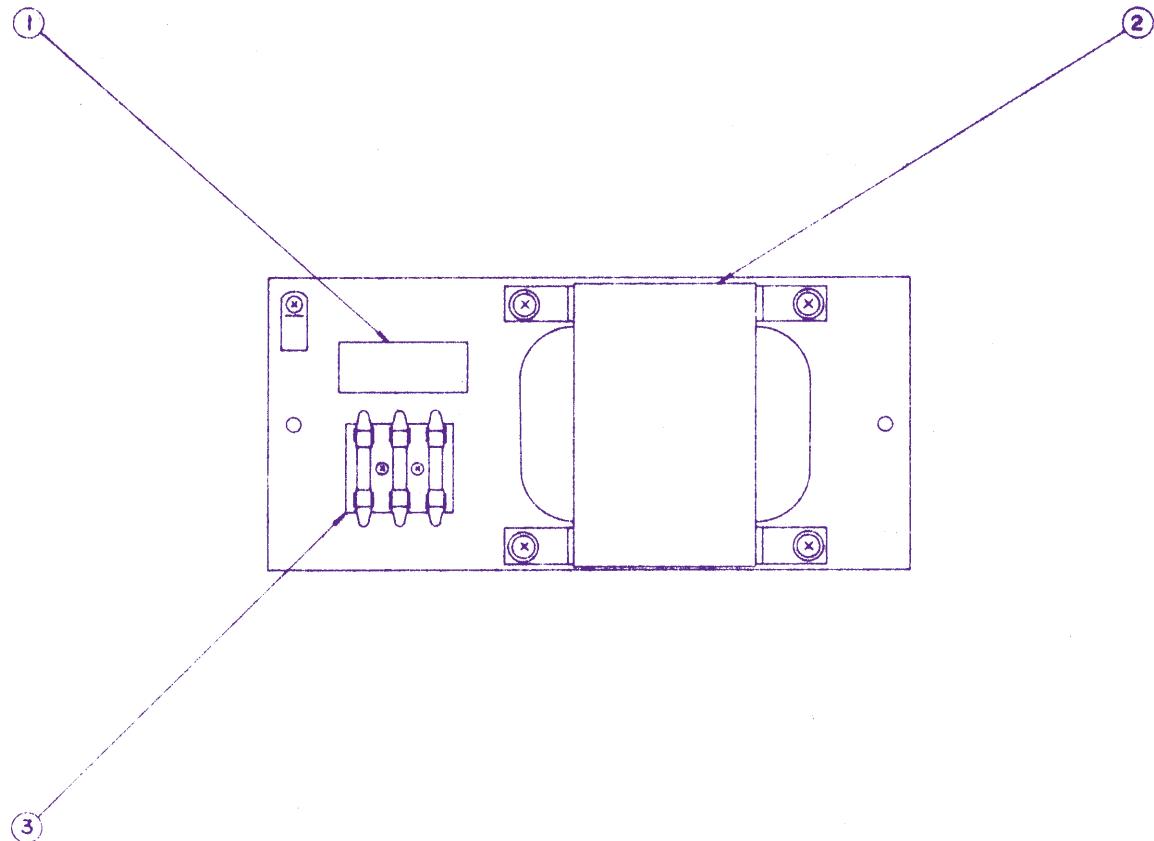


1	MR-2001	Control Panel Base
2	MR-2005 S-97345 S-97346	Spacer, Switch Wico Button Plunger, Yellow (GREMLIN 240-0009) Assy, Switch Wico (GREMLIN 510-0023)
3	MR-2005 S-97344 S-97346	Spacer, Switch Wico Button Plunger, Black (GREMLIN 240-0007) Assy, Switch Wico (GREMLIN 510-0023)



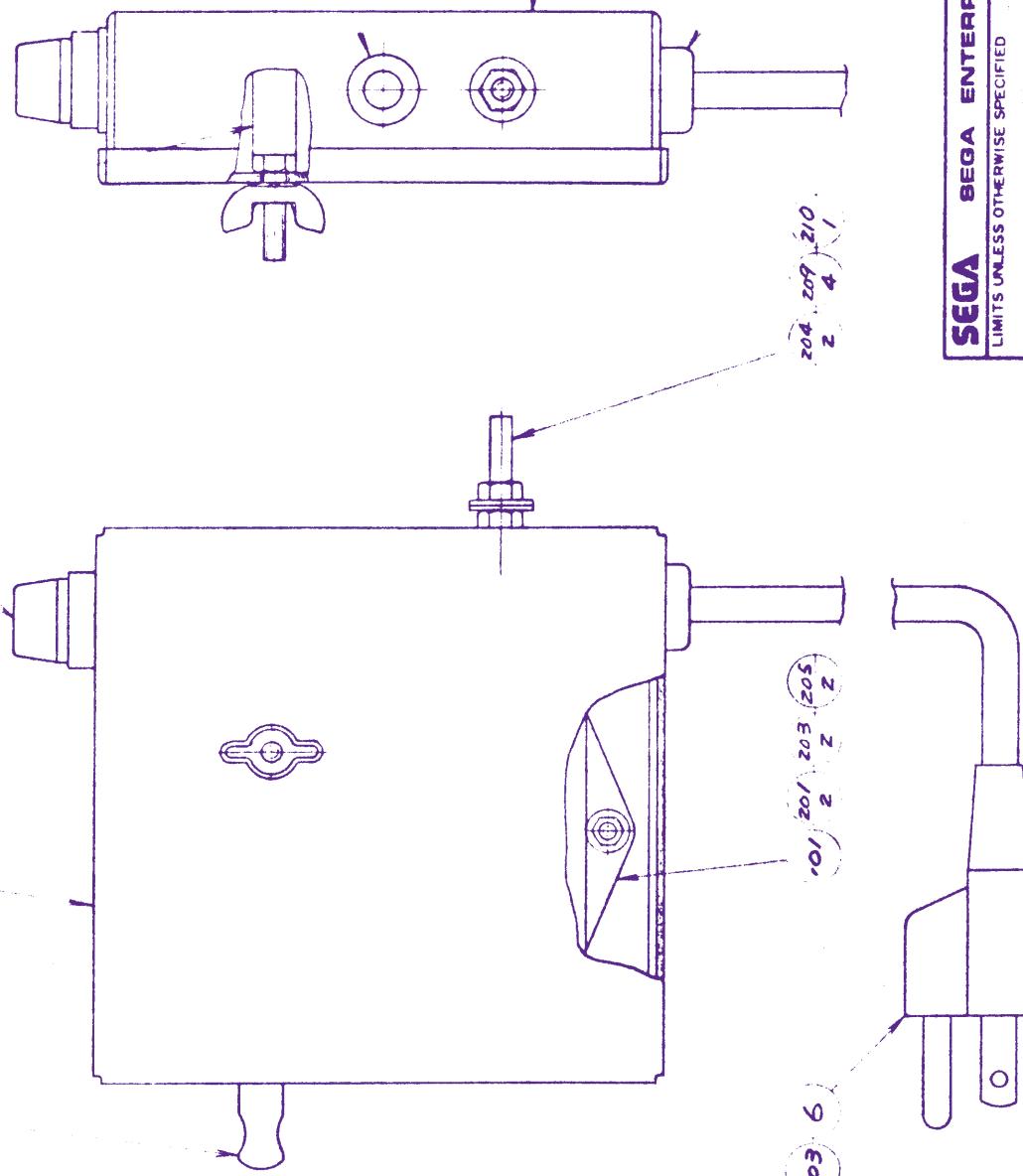
# 7 Parts Catalog

## Power Supply Assy



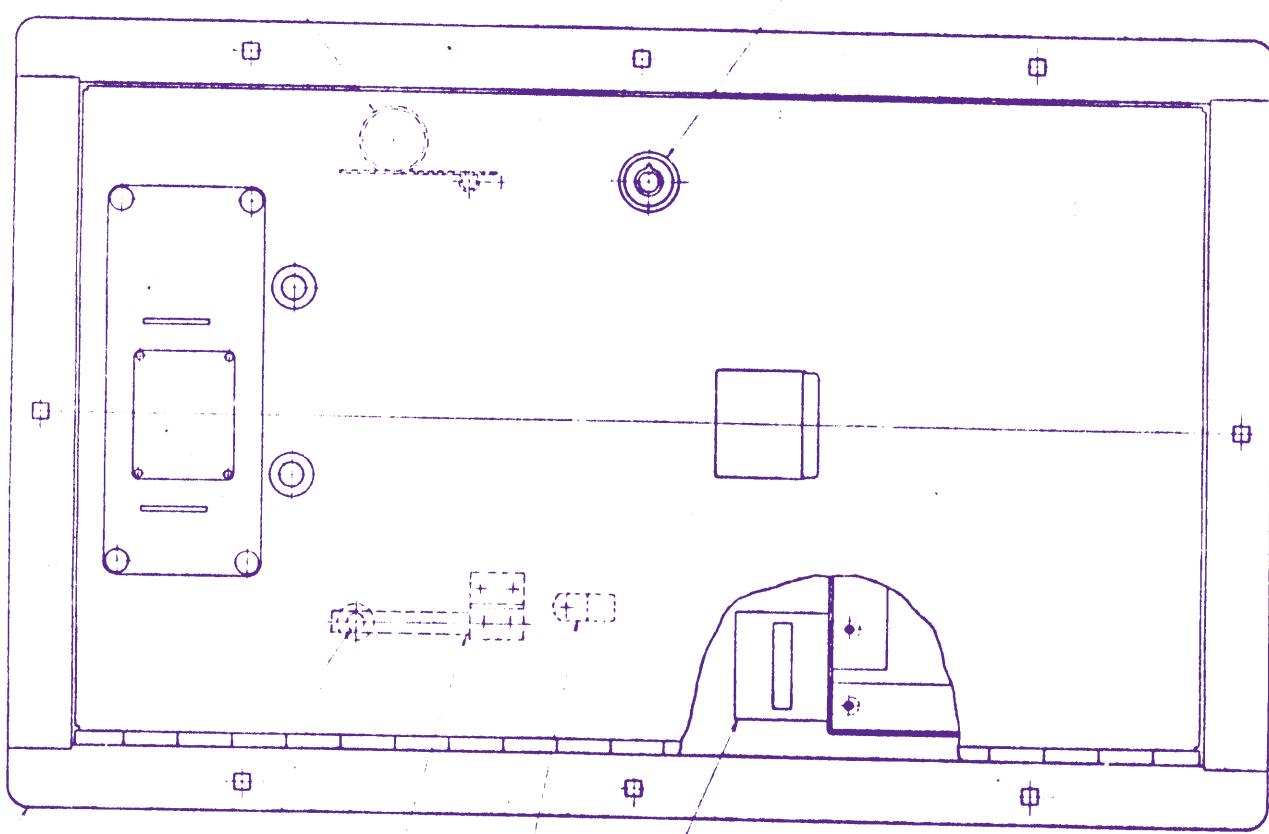
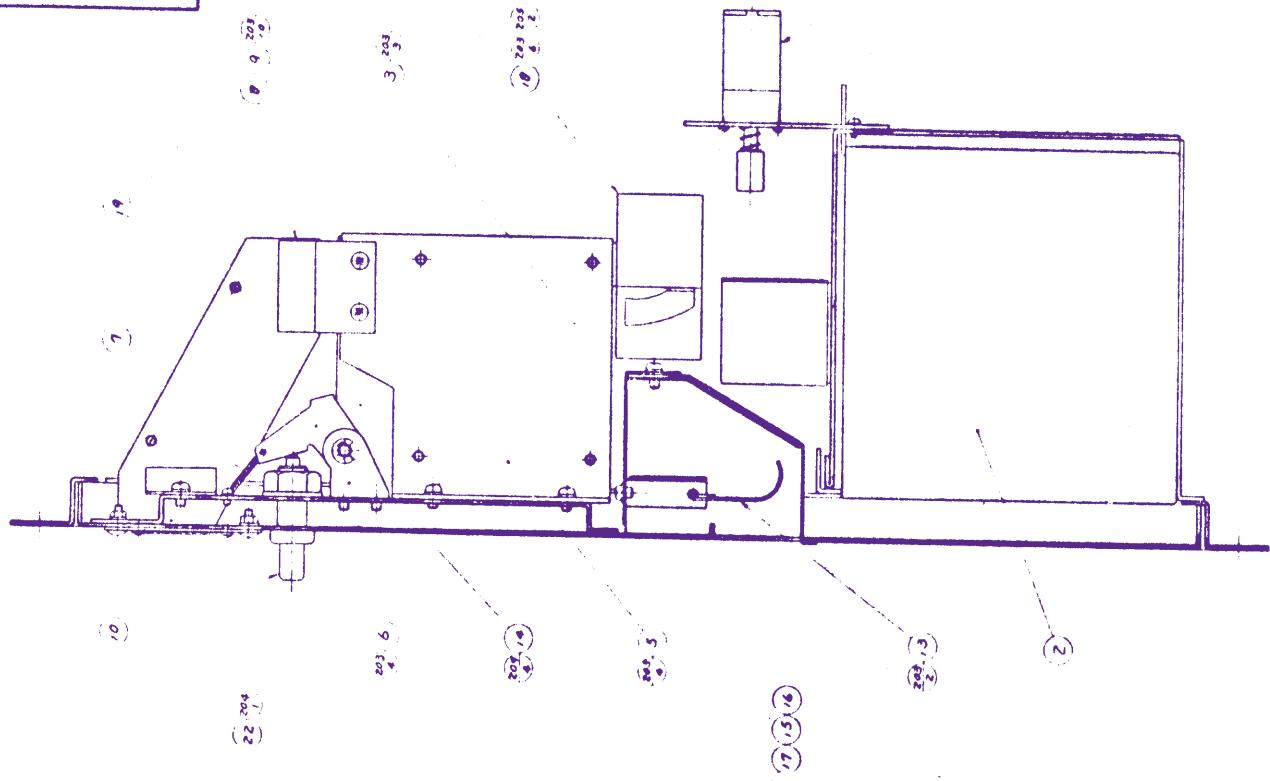
1	83334	Fuse Instructions
2	97313	Power Transformer, 100V-240V
3	S-93003	Fuse Holder, 3P
	S-96774	Fuse, 5A, Time-Lag Type

MACHINE	AS	ADD	AS	ALTERATIONS	93 8000



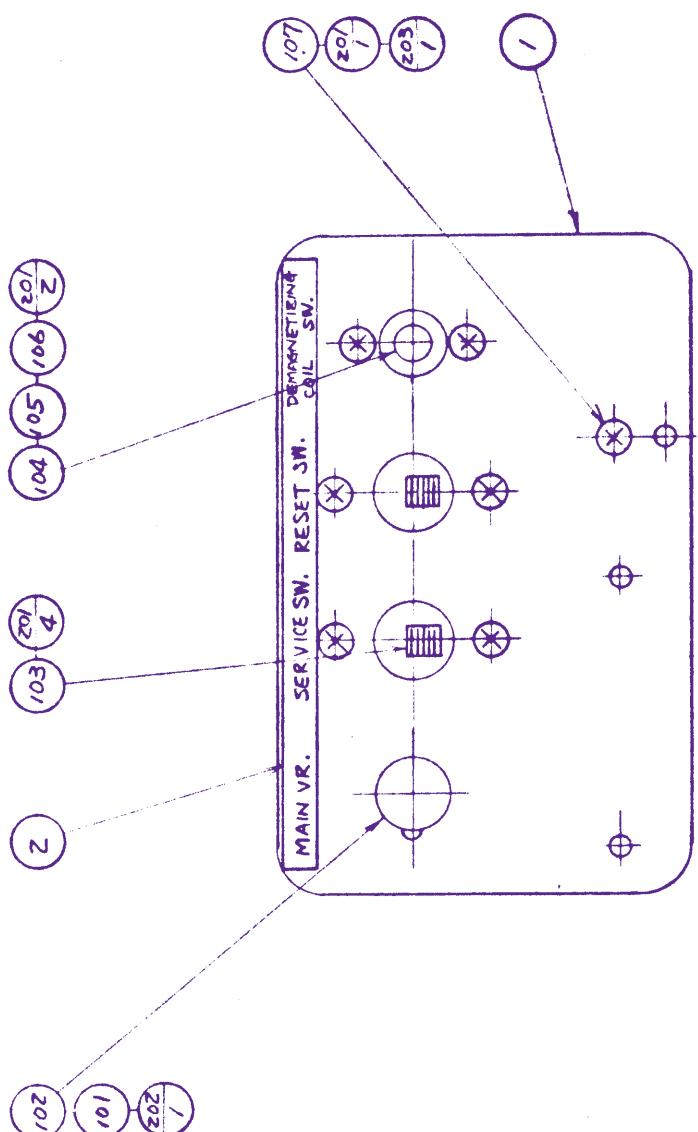
MR. 1019 (D-1/2)  
PART M  
JUNCTION BOX ASS'Y  
DESCRIPTION

MACHINE	SUB-ASS'Y							
NIR-1000								
ALTERATIONS								
① CHANGED DESCRIPTION								
② ADD	SW	9/66-EDGEL	GAT	SB				
③ ADD								
④ WAS 111-630	SW	9/3-80 GL	ER	FS				
210	111-937	1	M. SCREW, P.H. PHILL., BRASS, ISO		M4x25			
209	144-269	4	FLAT WASHER, SPECIAL, BRASS		4-12x1			
208	133-112	1	WING NUT, ISO		M4			
207	133-089	1	HEX. NUT, ISO		M4			
206	144-076	1	SPRING WASHER		M4 (2)			
205	144-057	2	FLAT WASHER		M3			
204	133-133	2	HEX. NUT, BRASS, ISO		M4			
203	133-088	2	HEX. NUT, ISO		M3			
202	111-678	1	M. SCREW, F.H. PHILL., ISO		M4x25			
② 201	111-854	2	M. SCREW, F.H. PHILL., ISO		M3x10			
③ 111	S-92398	50m	THERMO-SHRINK TUBE, "HISHILITE" TRANSPARENT, 17.5mm					
④ 110	S-96564	2	TERMINAL LUG, ROUND I.D. 5 (AMP 170011-2)					
⑤ 109	S-91978-1	*3	SOCKET ELEMENT (AMP 170147-1)					
108	S-93542-1	1	SOCKET, 3P, BROWN (AMP 1-482304-1)					
107	S-96148	1	BUSHING, STRAIN RELIEF, 8.3 (HEYCO SR-6N-4)					
106	S-96774	*1	FUSE, 5A, TIME-LAG TYPE, 6.35 <sup>0</sup> x31.75mm (NAGASANA 61T5)					
105	S-92310	1	RUBBER GROMMET, 7 <sup>0</sup> x10 <sup>0</sup> x45 (TAKIGEN NG-79-C)					
104	S-90207	1	FUSE HOLDER, W/SCREW CAP (SATO F-4000)					
103	S-95835	1	CABLE & PLUG ASS'Y, W/EARTH, 0.16x41x3, L=3m (UL STANDARD ROUND TYPE)					
102	S-94339	1	SWITCH, MICRO TYPE, DEPT. CHEAT INTER LOCK TYPE (CHERRY 579-30A)					
101	S-94972	1	NOISE FILTER, AC250V, 2A (TDK Z9B 2202-01)					
6	97339	1	CHOKE, 1MH					
5	FL-3237	1	SPACER TUBE, 26					
4	81319	1	STICKER, 120V					
3	80426	1	STICKER, 5 AMPERE					
2	MR-1021	1	COVER					
1	MR-1020	1	JUNCTION BOX					
D.NO	POS.	PART NO.	Q/U	DESCRIPTION	NOTE			
					APR. 9. 22 1980			
					DRAFT. No. 9/1/80			
JUNCTION BOX ASS'Y			PARTS LIST		MR-1019 (D-3/2)			
DESCRIPTION			PART NO.					



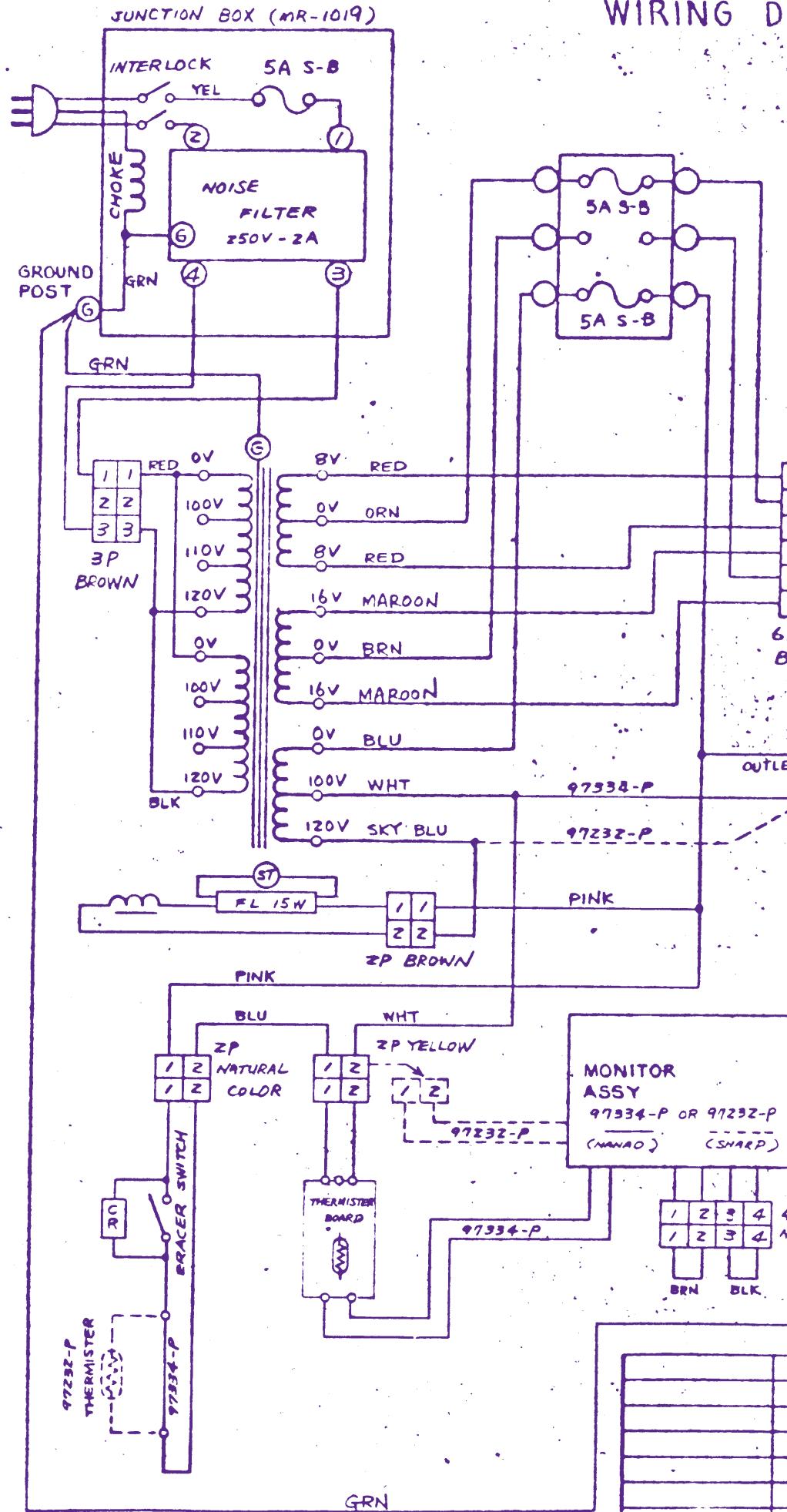
MACHINE	SUB-ASS'Y			
	MR-1000			
ALTERATIONS				
101	S-90181	1	CLAMP, CORD, PLASTIC, 8MM, 1.D.	
25	80931	1	STICKER, COIN METER	
24	903032-5-P	1	MAGNET COUNTER, 6 DIGITS, DC 5V	
23	80824	1	DENOMINATION PLATE, 25¢	
22	30060	1	KEY HOLDER	
21	SK-1057	1	TIET SWITCH ASS'Y, IM.	
20	SK-1042	1	SWITCH BRACKET	
19	CC-2006	2	COIN CHUTE, REJECTOR TYPE, 25¢ x 1	
18	CC-2050	2	COIN CHUTE BRACKET ASS'Y	
17	LS-1064	1	ACE CYLINDER LOCK, L.S. TYPE	
16	PB-1022	1	LOCK TONGUE	
15	SW-1108	1	SPACER RING	
14	SH-1007	2	SHAFT	
13	MF-1010	1	FLAP DOOR ASS'Y	
12	OL-3018	2	EXTENSION SPRING	
11	MO-1245	1	COIN ENTRY PLATE, U.S.A. 25¢ x 2	
10	MP-1017	2	REJECT BUTTON ASS'Y	
9	DH-1046	2	COIN ENTRY BRACKET, B	
8	DH-1045	2	COIN ENTRY BRACKET, A	
7	DH-1044	2	REJECT LEVER	
6	DH-1043	2	REJECT LEVER BRACKET	
5	DH-1042X	2	COIN CHUTE BRACKET	
4	MR-1204	1	ADJUSTMENT UNIT	
3	MR-1203	1	COVER	
2	MR-1202	1	CASH BOX	
1	MR-1201	1	COIN CHUTE DOOR	
ONO	POS.	PART NO	Q/U	DESCRIPTION
				NOTE
				APR. 75 9.23.1980
				DRAFT. 9/7/80
COIN CHUTE DOOR & CASH BOX ASS'Y PARTS LIST				MR-1200 (D-3/3)
DESCRIPTION				PART. NO

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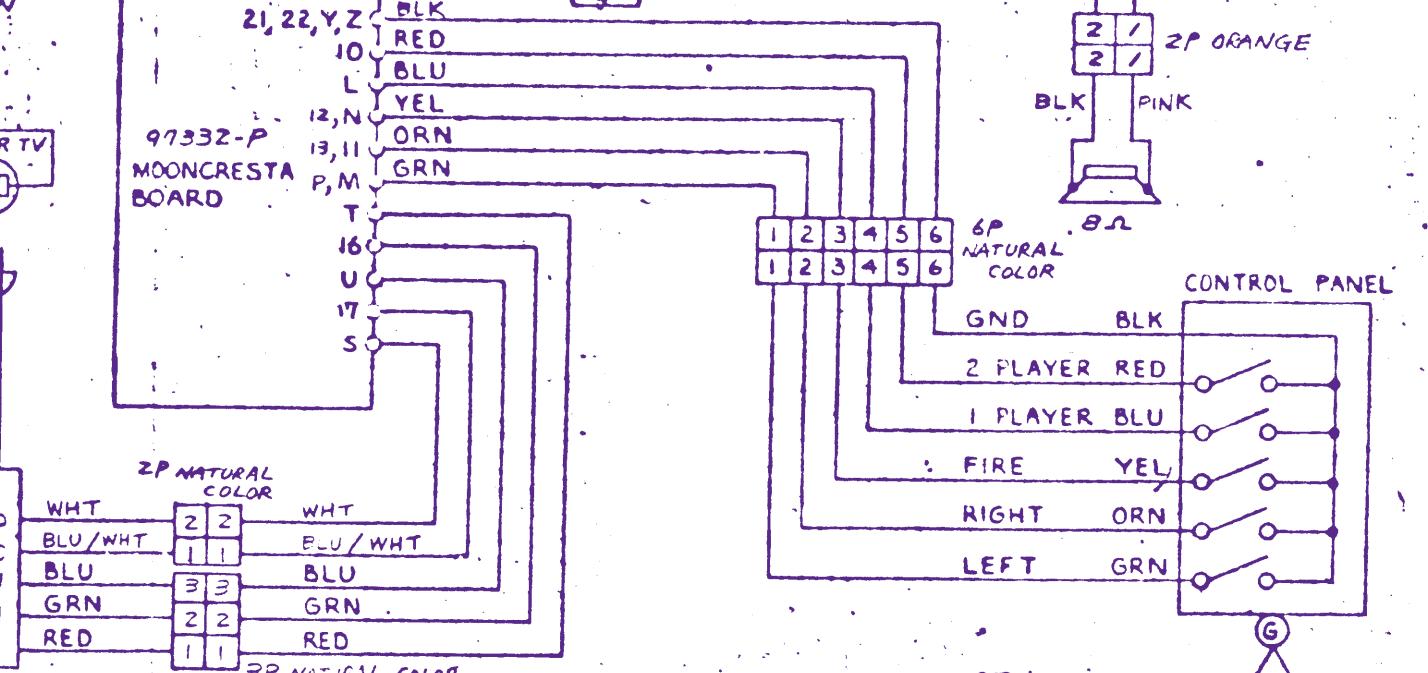
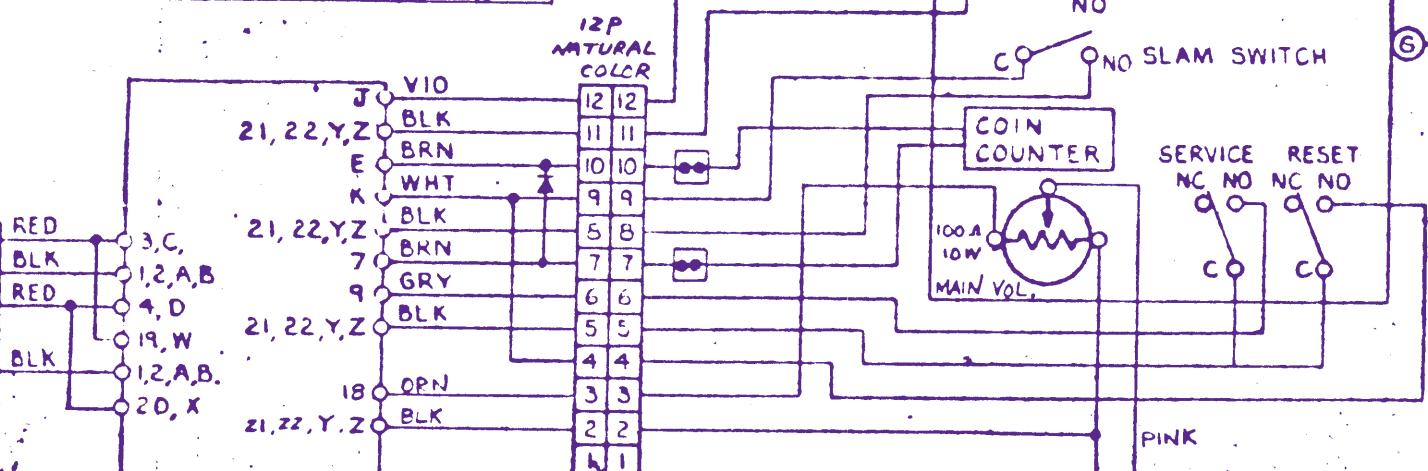
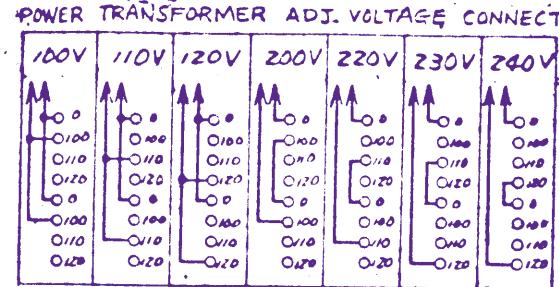


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3RD QUAT. PROJ.		DRAWING	APR
SCALE		1/1	9.7.80
DIM. IN		mm	ASSY 1200-00
CKD		"	CKD "
DRAW.		"	DRAW. 9/8-80
MATERIAL		REMARK	
HEAT TREAT		FINISH	
DESCRIPTION		PART NO.	
ADJUSTMENT UNIT		MR-1204 (D-1/2)	

MACHINE	SUB ASS'Y			
	MR-1200			
ALTERATIONS				
A WAS S-92040-1 A NAS Q/U, 110-2, 111-12 969-80 C/L SET X				
203	133-088	1	HEX. NUT, ISO	M3
202	111-991	1	SET SCREW, HEX. SOCKET, CUP POINT, ISO	M2.6x5
201	111-892	7	M. SCREW, P.H. PHILL., ISO, W/S. WASHER	M3x8
112	S-93687-1	1	SOCKET, ZP, FREE HANGING TYPE, ORANGE (AMP 1-170923-3)	
111	S-91978-2	X14	PIN ELEMENT (AMP 61116-1)	
110	S-91978-1	X2	SOCKET ELEMENT (AMP 170107-1)	
109	S-91980-2	1	PLUG, 12P, NATURAL COLOR (AMP 1-080278-0)	
108	S-92040-2	1	PLUG, 12P, FREE HANGING TYPE, RED (AMP 1-170924-2)	
107	S-92896	1	TERMINAL PLATE, (IZAWA NO.8) (TV 97232-P) (MATOSHITA DENKI ECG-50186A)	
106	S-95657	1	C & R COMBINATION ELEMENT, 0.1MF & 120Ω	
105	S-96397	1	PUSH BUTTON SWITCH, 1M, W/O BUTTON (MATOSHITA 9922R)	
104	S-96400	1	PUSH BUTTON, IVORY, 8P (TOKO 470-010-01-10)	
103	S-93640	Z	SWITCH, SLIDE TYPE, 6P (SHONA MUSEN SJ-0275-02)	
102	S-96416	1	KNOB, METAL (SATO K-29)	
101	S-96417	1	RHEOSTAT, 100Ω, 10W (NOBLE RPF 10)	
2 C1	83335	1	STICKER, SWITCH INSTRUCTIONS	
1 F3	MR-1205	1	SWITCH BRACKET	
D.NO.	POS.	PART NO.	Q/U	DESCRIPTION
				NOTE
				APR. 9.22 1980
				DRAFT: (Cub) 9/10 '80
ADJUSTMENT	UNIT		(PARTS LIST)	MR-1202 (D-32)
		DESCRIPTION		PART. NO.



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



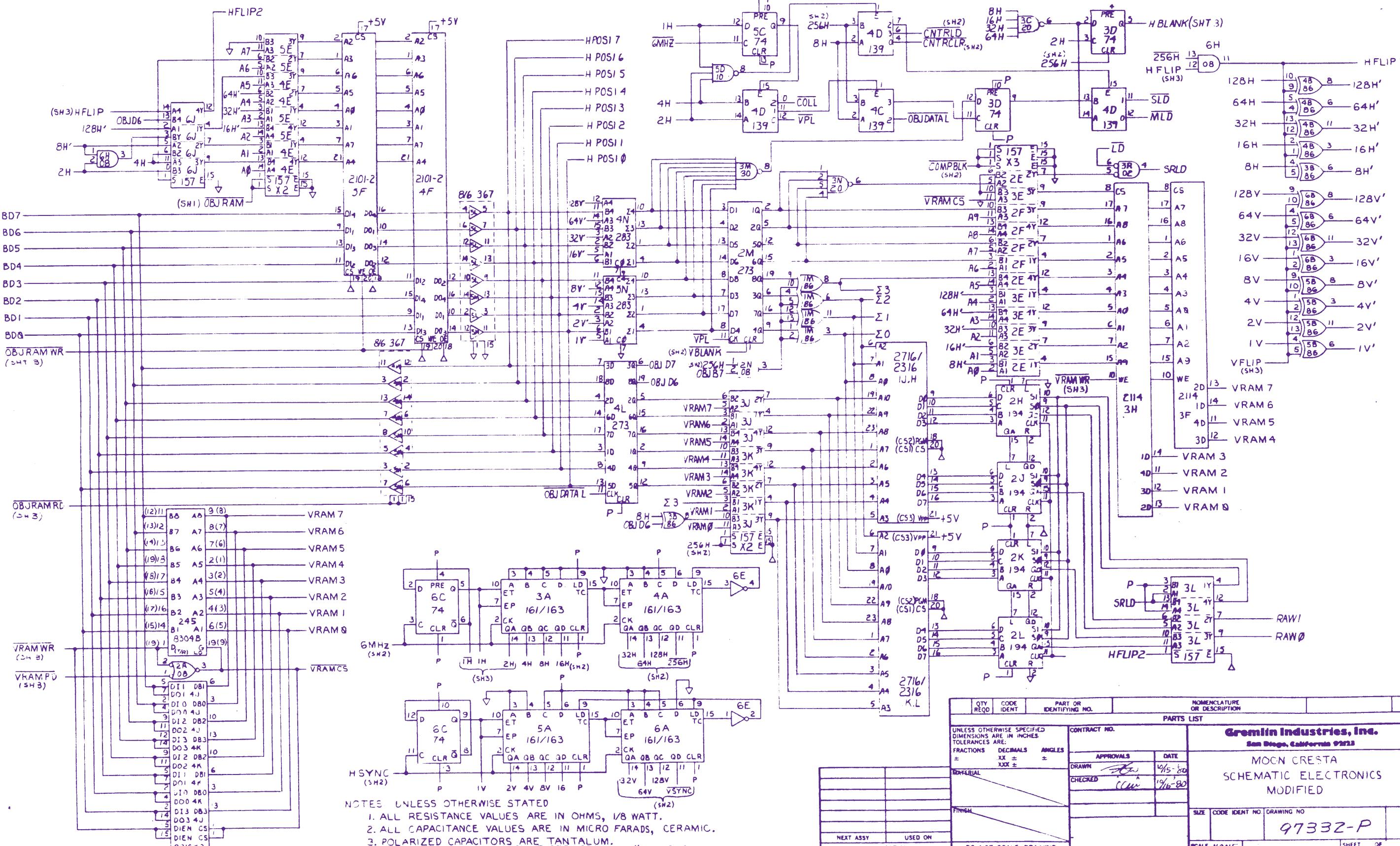
QTY REQD	CODE IDENT	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE FRACTIONS DECIMALS ANGLES XX - XXX -		CONTRACT NO	 <b>Gremlin/SCGA</b> San Diego, California 92123	
MATERIAL		APPROVALS	DATE	<b>ASSEMBLY, TOP GAME, MOONCRESTA UPRIGHT</b>
		DRAWN <i>EW</i>	9-30-'80	
		CHECKED <i>CLW</i>	10/8-'80	
FINISH				SIZE    CODE IDENT NO    SCHEMATIC DIAGRAM NO. 375 TWC. CHART NO. SGB-2835
DO NOT SCALE DRAWING			SCALE NONE	SHEET OF

**Gremlin/SCGA**  
San Diego, California 92123

ASSEMBLY, TOP  
GAME, MOONCRESTA  
UPRIGHT

## MAIN I.C. BOARD SHT

		REVISIONS		
ZONE	LTR	DESCRIPTION	DATE	APPROVET



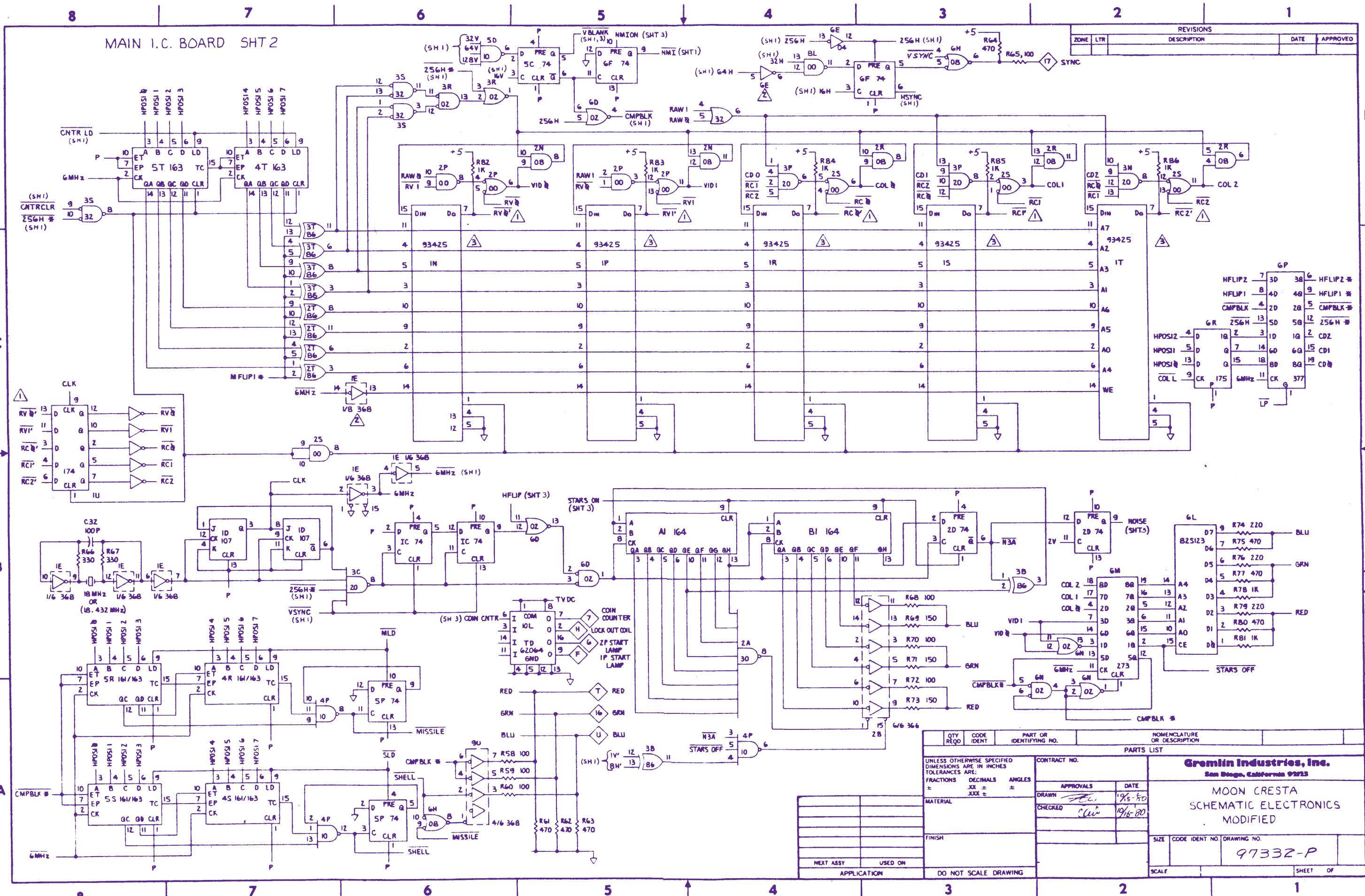
NOTES UNLESS OTHERWISE STATED

1. ALL RESISTANCE VALUES ARE IN OHMS, 1/8 WATT.
2. ALL CAPACITANCE VALUES ARE IN MICRO FARADS, CERAMIC
3. POLARIZED CAPACITORS ARE TANTALUM.
4. FOR MODIFICATION PROCEDURE SEE DRAWING # 800-3110.

**Gremlin Industries, Inc.**  
San Diego, California 92121

MOON CRESTA  
SCHEMATIC ELECTRONICS  
MODIFIED

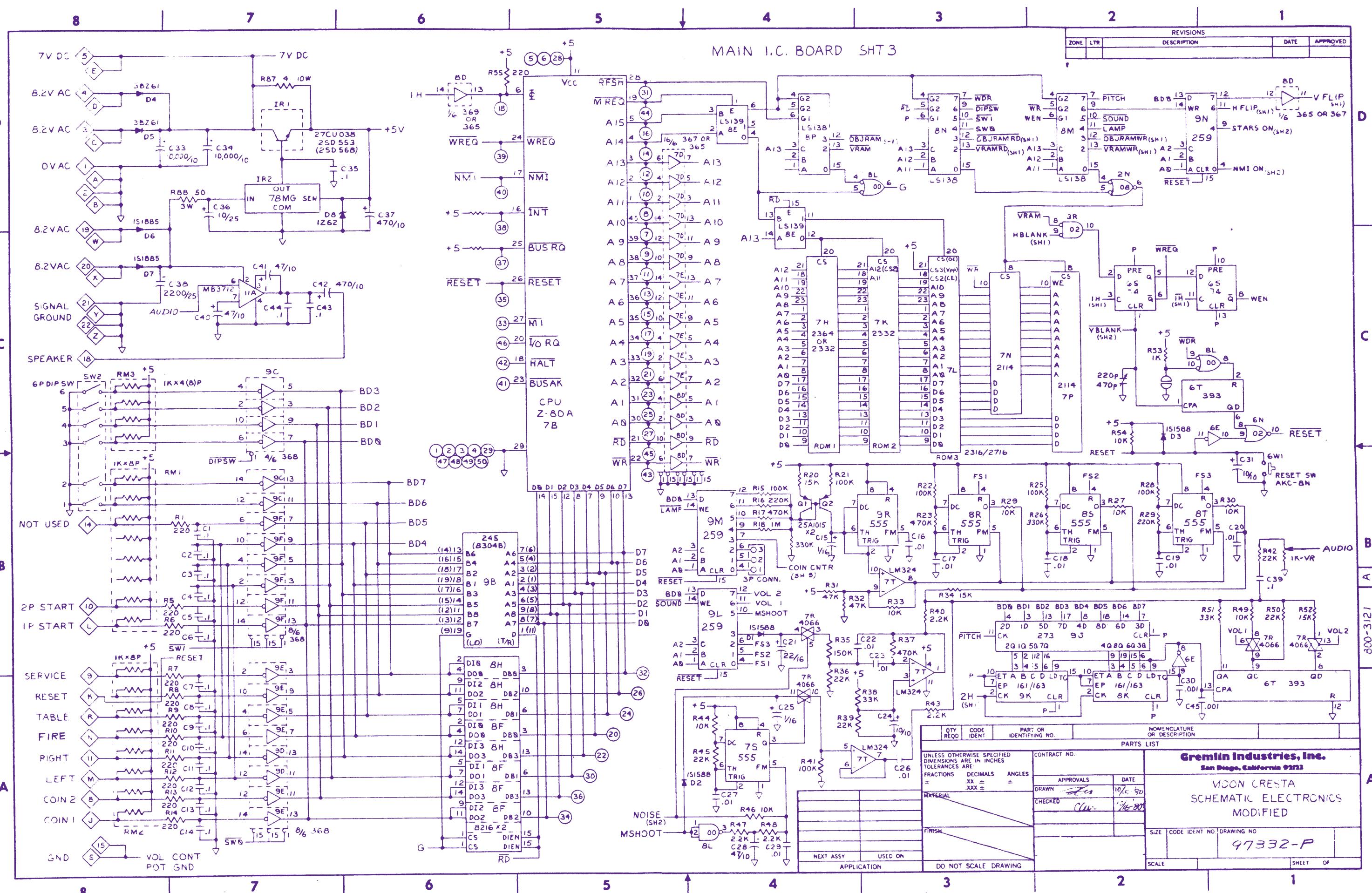
			FRACTIONS XX ± XXX ±	DECIMALS XX .XX	ANGLES XX ±	APPROVALS	DATE	MOON CRESTA SCHEMATIC ELECTRONICS MODIFIED		
			MATERIAL			DRAWN	10/15 '80			
						CHECRED	CCW	10/16 '80		
			FINISH							
NEXT ASSY		USED ON				SIZE			CODE IDENT NO	DRAWING NO
APPLICATION		DO NOT SCALE DRAWING						9733Z-P		
					SCALE NONE			SHEET OF		

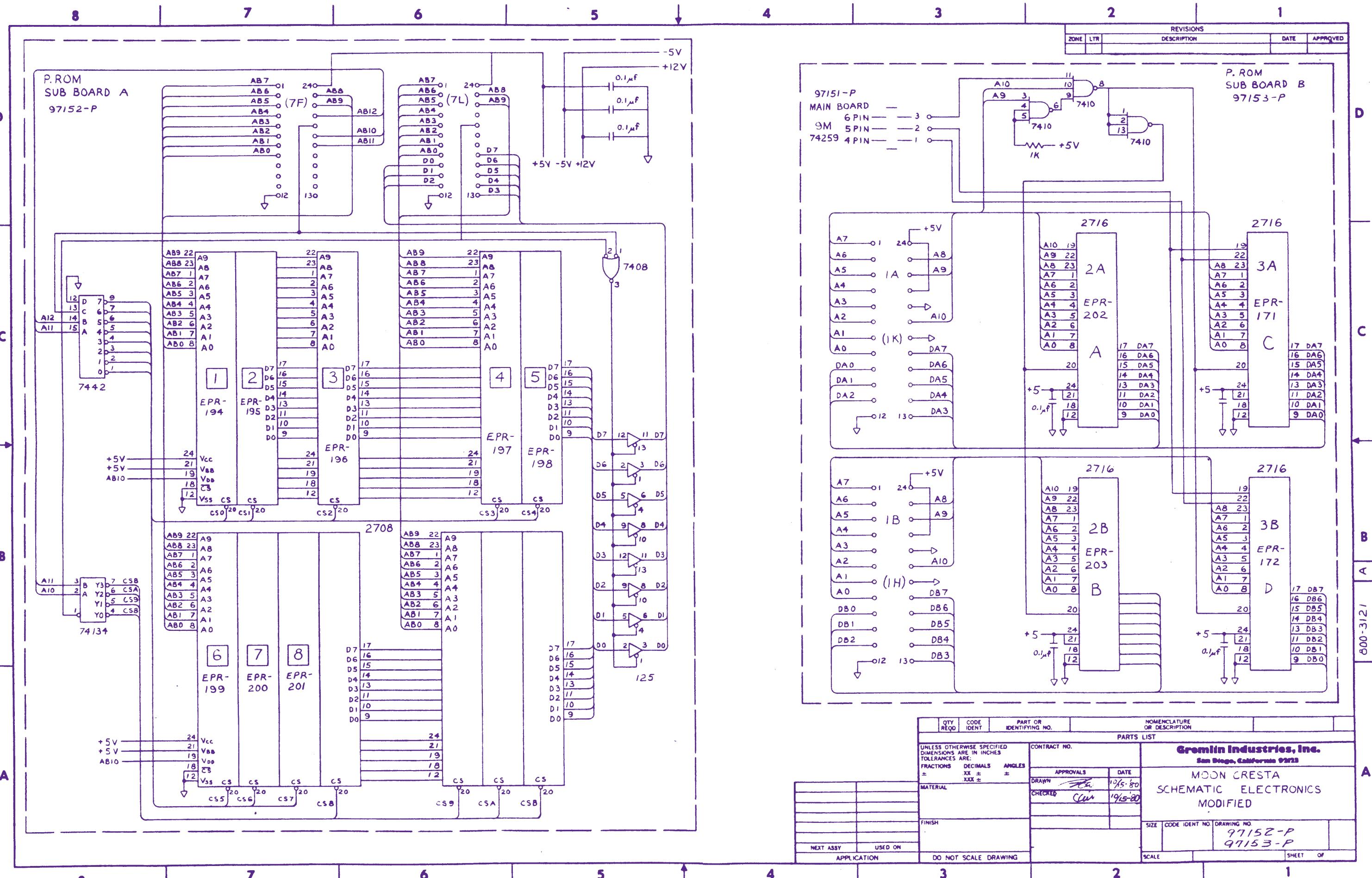


Gremlin Industries, Inc.  
San Diego, California 92123

MOON CRESTA  
SCHEMATIC ELECTRONICS  
MODIFIED

9733Z-P



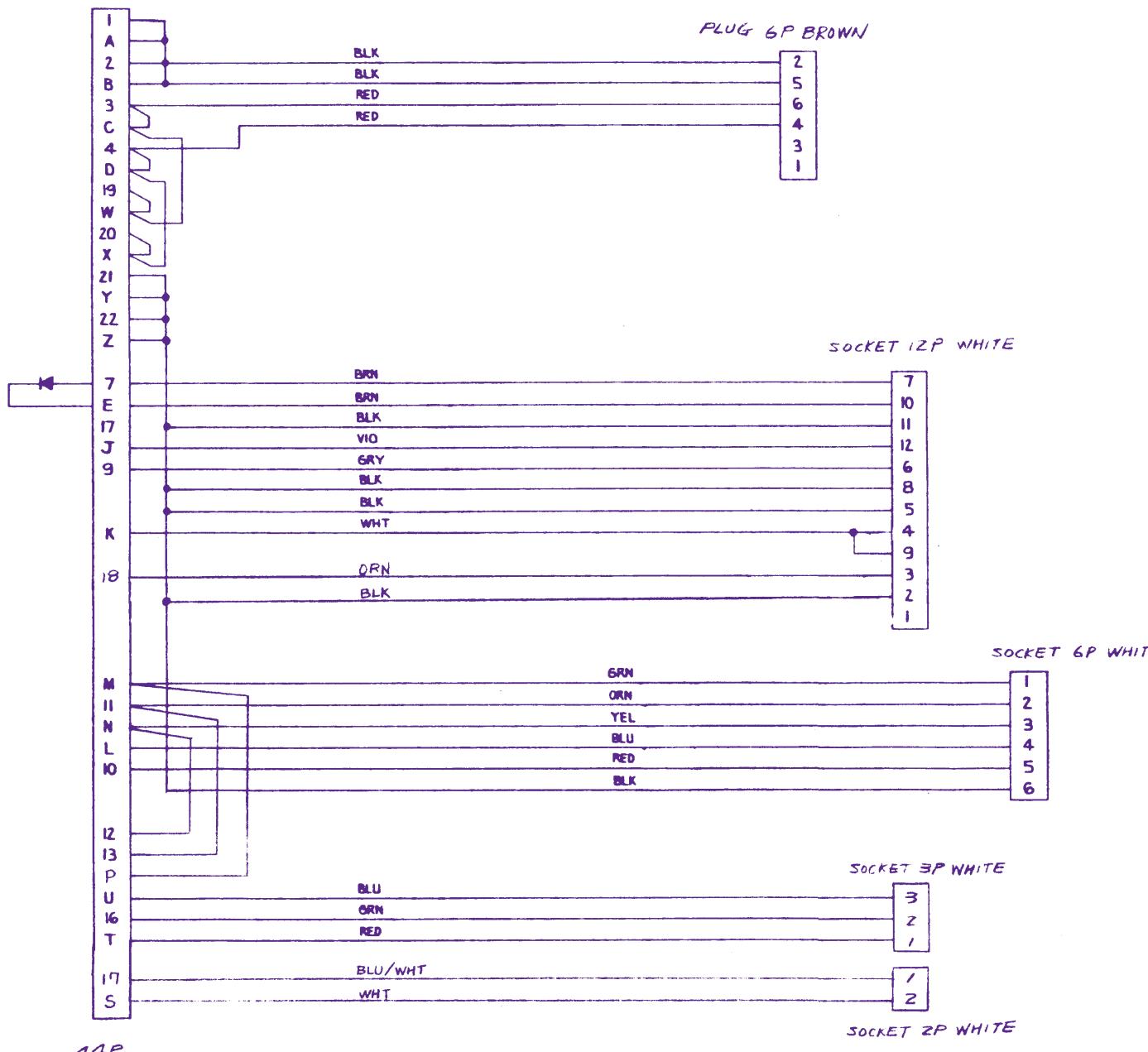


8 7 6 5 4 3 2 1

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS   DECIMALS   ANGLES ±   XX ±   ± XXX ±		CONTRACT NO.		Gremlin Industries, Inc. San Diego, California 92123	
		APPROVALS	DATE		
MATERIAL		DRAWN	1/15/80		
FINISH		CHECKED	1/16/80		
700 - 0030	USED ON				
NEXT ASSY	APPLICATION	DO NOT SCALE DRAWING			
				SIZE CODE IDENT NO. DRAWING NO. SGB-2835-1 REV. -5	
				SCALE NONE SHEET OF	

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